ILLINOIS ENVIRONMENTAL PROTECTION AGENCY MEMORANDUM

DATE: May 25, 1984

TO: Walter Franke

FROM: Ken Verma KMV

SUBJECT: AMAX ZINC - Technical Recommendation for Enforcement

I.D. 163 121 AAK
Permit #: 7211 1176
Roaster and Acid Section

The following is a Technical Recommendation for Enforcement for SOx fumes emissions incident on May 10, 1984, and other excess emissions on May 7,8,9, 1984.

A. DESCRIPTION OF VIOLATION

The facility caused emissions of fumes of SOx from their electrostatic precipitator area on May 10, 1984. Permit #7211 1176 - Roaster and Acid Section. As a result of this incident 282 people were treated at the St. Mary's Hospital. This is an apparent violation of Section 9(a) of the State of Illinois, Environmental Protection Act, which states:

> "No person shall cause or threaten or allow the discharge or emission of any contaminant into the environment in any State so as to cause or tend to cause air pollution in Illinois, either alone or in combination with contaminants from other sources, or so as to violate regulations or standards adopted by the Board under this Act."

The incident and pertinent information is summarized as follows:

On May 10, 1984, Mrs. Betty Lee Henley of 1115 Morgan Street in Rush City called this office and left a message on the code-a-phone. She indicated the time to be 2007. Mrs. Henley complained of getting sick at her stomach, shortness of breath, lack of speech, nauseated. Exhibits #1 & #9.

Later during investigations we discovered that Mrs. Henley had called the following three companies before calling the Illinois EPA.

Name of Company	Date & Time Call Received	Complaint
Monsanto Company	5/10/84 - 2005	Fumes in the house (Exhibit #2)
Edwin Cooper	5/10/84 - 2000	Strange odor in her house causing breathing problem. (Exhibit #3 - p. 266)

This was the first report received as to record of time the incident occurred. The above three exhibits indicate that the incident occurred before 8:00 p.m. The interviews conducted with Mr. Byron Thompson and Jim Counsel indicate the incident occurred after 7:30 p.m. Exhibits #7 and #12 respectively. With the above data, it is safe to assume that the emissions that caused the major impact occurred between 7:30 p.m. to 8:00 p.m.

The fumes coming from the south caused eyes burning, shortness of breath, dizziness and nausea for the residents of Rush City and East St. Louis area. As a result of the incident, 282 people were treated at St. Mary's Hospital in East St. Louis. Seven were admitted for overnight observations. Exhibit #5.

The industries immediately south of Rush City are Amax Zinc and Edwin Cooper. Monsanto is immediately south of these two industries, then follows Cerro Copper and other industries. All these industries are located in Sauget, Illinois, in a heavy, industrialized area. Exhibit #6.

None of the industries made a report of malfunction. Initial telephone contacts were made with the following companies:

1. Amax Zinc
2. Edwin Cooper
3. Monsanto Co.
4. Cerro Copper
5. Clayton Chemical
6. Trade Waste Incineration
7. Phillips Pipeline
8. Mobil Oil

Midwest Rubber was not contacted because of their location and the unique odor that is easily identifiable.

None of the companies accepted responsibility for the incident.

Inspection at Edwin Cooper revealed, they were blowing filters at 6:45 p.m. on May 10, 1984, at their Unit 275 of E-638 process. This caused odors in the Roaster area of Amax Zinc. Roaster area of Amax Zinc is approximately 100' west of this Unit 275. Blowing filters is a process that normally takes 15 minutes. It normally does not generate any odor complaints. The review of their records for Unit 275 did not show any malfunction or upset. See Exhibits #7 and #8.

Inspection at Amax Zinc on May 16, 1984. John DeSelm, Environmental Engineer of Amax Zinc, agreed that there were larger leaks at the precipitators than normal on that day. He said between 7:15 p.m. to 8:15 p.m., they were lancing. Lancing of waste heat boilers occurs approximately once

every eight hours. It is performed to increase air movement through the boilers to the air pollution control equipment. When lancing occurs, the I.D. fans are increased to protect the workers who lance from flames in the boiler. This causes a positive pressure in the electrostatic precipitators and hence more fugitive emissions.

The #2 roaster was shut down at 1 a.m., morning after the incident. This roaster was scheduled to be shut down on June 3, 1984, for routine maintenance. I asked when and why decision was made to shut down sooner. Mr. DeSelm said the company thought the incident investigators or media would be coming to the plant and looking at the SO_2 leaks and it was primarily done to maintain good public relations. He said the decision was made on May 11th morning, (four to five hours after the incident). See Exhibit #10-a and #10-b.

Amax Zinc has been experiencing process and emission problems for some time. Unit 268 and Unit 275 of Edwin Cooper, which are approximately 400' and 100' east of Roaster-Precipitator area of Amax Zinc, respectively, had to be evacuated several times because of the SOx emissions from Amax Zinc.

Amax Zinc had *SOx emissions on 7th, 8th, 9th, and 10th of May, 1984. Unit 268 was evacuated on May 9th. The union workers maintain a log called 268 emissions log, where they record *emissions from Edwin Cooper as well as the neighbors (Amax Zinc and Monsanto Co.). The problems experienced on May 7th, 8th, and 9th were recorded in this log. Exhibit #11-a and 11-b.

Edwin Cooper's management also maintains a log called the off shift supervisor's log. This log book also shows *SOx emission problems recorded for 7th, 8th, and 9th. Exhibit #3.

The *SOx emission complaints from Amax prior to this date are also logged. See Exhibits #11-b and #13.

On the evening of May 10, 1984, Mr. Jim Counsel, President of Local 871 of Edwin Cooper was on duty from 2 p.m. to 10 p.m. He stated that fumes started coming out of Amax Zinc at 7:30 p.m. Since the wind was from the southeast, Unit 268 of Edwin Cooper was not affected. He said the problem on May 10th appeared to be severe. See Exhibit #12.

*Excess

Fumes were observed coming out of the precipitator area of Amax Zinc. See Exhibit #18. Byron Thompson, the operator for Unit 275 of Edwin Cooper, was present approximately 100' from the Roaster-Precipitator area of Amax Zinc. He said around 7:30 p.m., he experienced discomfort in breathing. He went under the rail car. In a couple of minutes, the fumes disappeared. The fumes were grey in color. He said at times before they had to evacuate Unit 275 because of grey colored fumes from Amax Zinc. See Exhibit #7.

On May 22, 1984, Amax Zinc had another *SOx emission. A plant worker at Edwin Cooper's Unit 268 became sick from the fumes. This incident was reported to us by Safety Committee of Edwin Cooper. See Exhibit #14.

The plant manager of Edwin Cooper did not tell us the source of emissions. He also refused to give us the information recorded on the incident in their off shift log book. Exhibit #15.

Amax Zinc did not report the emission incident. From the tone of memos written by Richard Bentle and Casey Arcynski, of Edwin Cooper, it is apparent that Edwin Cooper's management does not want Amax Zinc's problems exposed and expect a vice versa treatment from Amax. Exhibits #16 and #17.

In the year 1984, Edwin Cooper has experienced SO_2 emissions from Amax Zinc on the following dates:

March 21, 22 and 24

April 13, 15 and 30

May 3, 7, 8, 9 *Exhibit 11-a*

Please note that Edwin Cooper's Unit 268 is affected only when the wind is from west or northwest.

B. INVESTIGATION REPORTS

May 16, 1984, inspection at Amax Zinc. Exhibit #10-a. Other investigative reports will be furnished later as Exhibits 10-c, 10-d, etc.

C. CORRESPONDENCE BETWEEN VIOLATOR AND FOS

None.

D. AGENCY PERMIT STATUS

Permit granted 10/22/82

Permit expiration date 10/25/87.

*Excess

E. AVAILABLE SOLUTIONS TO CONTROL PROBLEMS

F. COST OF CONTROL

G. VIOLATOR'S ATTITUDE

H. DESCRIPTION OF LOCATION

The plant is located on the northeast corner of Monsanto Avenue and Route 3 Intersection in Sauget, Illinois. The plant is in a heavy industrial area with Edwin Cooper immediately east of the plant and Monsanto's Krummrich plant across the street. Other major industries in the area are Cerro Copper, Mobil Oil, Midwest Rubber and Phillips Pipeline. See Exhibit #6.

I. PARTIAL LIST OF POSSIBLE WITNESSES

1. Jim Counsel - President of Local 871, Edwin Cooper
2. Eddie Domyan, Chairman of Safety Committee, Edwin Cooper
3. Byron Thompson - Plant worker in Unit 275, Edwin Cooper
4. Willie Able - Night Supervisor, Edwin Cooper
5. Rev. James Hall, 1034 Paradise Street, Rush City
6. J. Evans 7. K. Verma

SO_2 fumes (sulphur dioxide) is intensely irritating to eyes and respiratory tract causing burning of eyes and tearing, coughing, and chest tightness. Severe exposure may cause a person to stop breathing. See Exhibit #30.

SO_3 fumes (sulphur Trioxide)

Disaster Hazard: Dangerous, when heater it emits highly toxic fumes of oxides of sulphur. Will react with water or steam to produce heat and toxic fumes of sulphuric acid. See Exhibit #31.

The hourly data obtained from our monitor located at 13th and Tudor shows SO_2 concentration and wind directions. See Exhibit #10-b.

This data verifies that we had westerly winds on May 7th, 8th, and 9th of 1984. The wind shifted to south-easterly on the evening of 9th and sustained that direction until 10 p.m. on May 10th, with only slight variations. That is the reason Edwin Cooper Unit 268 experienced problems

on 7th, 8th and 9th. On 10th, they could only observe visually.

J. OTHER PERTINENT DATA

Citizen interview over the phone - Rev. James Hall believes the odor was SO_2. Exhibit #20.

List of employees present during 2nd shift on May 10, 1984, at Edwin Cooper. Exhibit #21.

East St. Louis Police Department Record. Exhibit #22.

Weather Data. Exhibit #23.

Interviews at Amax Zinc - Exhibit #24.

Interview with Terry Jennings of Air Monitoring who was driving on Route 3 that evening. Exhibit #25.

Inquiry if there was a rail car incident at Amax Zinc or Edwin Cooper that evening - negative. Exhibit #26.

Telephone inquiry - Clayton Chemical. No problems or upsets. Exhibit #27.

Meeting with Eddie Domyan - Chairman of Safety Committee of Edwin Cooper. It also lists names and telehpone number of possible witnesses. Exhibit #28.

Investigation - Monsanto Co. - Interviewed Mr. Bollinger who had investigated situation for Monsanto that evening. Also covers Monsanto's sewer out fall across from Rt. 3. Exhibit #29.

Initial call by Amax Zinc informing no problems at Amax. Exhibit #32.

Meeting with Amax on May 11, 1984, at Collinsville Regional Office. Amax tried to convince IEPA that they were not the cause of the incident. Exhibit #33.

Newspaper articles - Exhibits #34, #35 & #36.

KSV:pbo

cc: DAPC Central File - M. Zamco
cc: Region III

Attachments (Exhibits)

Exhibit 46

Reference #11

June 27, 1984

I.D. 163 121 AAK

Walter Franke

Ken Verma

AMAX ZINC - T.R.E.

On June 26, 1984, at 11:01 a.m., Mr. Ron Brown, a plant worker at Edwin Cooper called me. Mr. Brown said that he had to evacuate the Unit 268 3 to 4 times because of SO_2 from Amax. Mr. Brown used to work in a sulphuric acid plant (Allied Chemical in Fairmont City) and can identify SO_2. He said these incidents are logged in the Unit 268 log.

I asked him about the May 10, 1984, incident. He said he was off from May 8 through May 11. Regarding the May 22nd incident (See Exhibit #14) he said the problem was not caused by Amax. He thought it was TPP and Product 804 that was kept at too high a temperature for too long. He said he was throwing up, gagging and nauseated. This was reported to Edwin Cooper's management.

Mr. Brown is willing to testify.

KSV:pbo

cc: DAPC Dentral File ✓
cc: Enforcement Services
cc: Region III

NOTES ON INSPECTION OF INDUSTRIES AT MONSANTO

Date: August 4 and 5, 1947

All of the industries connected to the Monsanto village sewer were contacted on the above dates to determine the type process employed and the type wastes discharged so that the effect that the wastes might have in causing taste in fish in the Mississippi River might be assessed.

Lewin Metals Company

Interviewed: M. H. Marx, Plant Superintendent; J. W. Goldenberg Plant Engineer

Operations at Lewin Metals Company Monsanto plant consist of the refining and smelting of copper. Manufacture of seamless copper tubing is also carried on in this plant. No process wastes are discharged to the sewer, with the exception of the overflow water from the cooling pond. This water should contain nothing that would be detrimental to the river or cause tastes in fish.

Sterling Steel Casting Company

Interviewed: R. O. Shive, Plant Manager and President

The entire operation of this plant consists of steel casting. The only process wastes discharged to the sewer consist of cooling waters from the electric furnaces, compressors, and air-conditioning system. These wastes should have no detrimental effect on the river.

Midwest Rubber Reclaiming Company

Interviewed: D. V. Topper, Plant Superintendent; O. K. Trimble, Executive Vice President.

Reclaimed rubber is produced in this plant. In the process, old rubber, principally from discarded automobile tires, is heated in autoclaves with a 5 per cent caustic solution or a zinc chloride solution of less than 1 per cent concentration. The charge from the autoclaves is dropped into a magazine tank where water is added. The suspension of rubber and water is screened, the rubber being removed from the screens for sales or dry processing and the water being dumped into settling tanks. After the settling period in these tanks, the supernatant is drained to the sewer and the sludge is discharged to a Dorr clarifier for further settling and decanting. Water overflowing from the Dorr clarifier is discharged to the sewer and the remaining sludge is discharged to an Oliver filter. Water removed in the filter is discharged to the sewer and the rubber is either dry processed or sold as is. In the process certain compounds such as pine tar, naptha, sulfides and polysulfides may be added. These are added in very small amounts and it is doubtful if they would be in sufficient amounts to cause taste in fish in the Mississippi River. The total waste volume from the plant is approximately 1.5 mgd.

While it appears doubtful that Midwest Rubber Reclaiming Company wastes are responsible for taste in fish in the Mississippi River, it is possible that these wastes may be responsible. It is recommended that samples be collected of waste waters from Midwest Rubber Reclaiming Company in order to further investigate the possibilities of their wastes causing tastes in fish.

Darling and Company

Interviewed: F. B. Bliss, Plant Superintendent

Darling and Company manufactures fertilizer at the Monsanto plant. The process consists of the acidulation of phosphate rock and and the subsequent blending of the rock with nitrates, lime, etc., to meet the individual specifications for fertilizer. The only point in the process from which liquid wastes are discharged to the sewer consists of the washing of gases from the acidulation process. These gases are washed by a water spray in a tower and the overflow from the bottom of the tower discharges to the sewer. While no definite determination of the volume of water used in this plant was obtainable, it is understood to be quite small. Mr. Bliss advised that only a 2-inch water line supplies all of the water needs of the plant.

It appears doubtful that wastes from Darling and Company are responsible for tastes in fish in the Mississippi River, and it is believed that this plant can be dropped from further consideration.

American Zinc Company of Illinois

Interviewed: L. P. Davidson, Plant Superintendent

The process at American Zinc Company Monsanto plant consists primarily of the electrolytic refining of zinc. The raw material at the plant consists of zinc oxide which is dissolved in sulfuric acid and settled. The sludge is further refined for the removal of copper, cobalt, etc. The residue sludge from this process is piled on company property and does not reach the sewer. The liquid residue remaining after the removal of other materials consists of a solution of zinc sulfate and is

returned to the original process. The zinc dissolved in sulfuric acid is in the form of zinc sulfate here also. Zinc is removed from the zinc sulfate solution electrolytically. Oxygen is given off to the atmosphere. Pure zinc is plated out and the sulfuric acid remaining is returned to the head end of the process where it is reused to dissolve more zinc oxide.

The only liquid wastes from the process consist of spills and a large volume of cooling water used in the electrolytic cells. This volume consists of about 1,100 gallons per minute.

It would appear that wastes from American Zinc Company plant are not responsible for tastes in fish and that this plant may be dropped from further consideration.

Socony Vacuum Oil Company Refinery

Interviewed: C. P. Baker, Plant Manager; W. F. Fuhrhop, Industrial Relations Manager; and, John W. Borders.

This plant is an oil refinery. Only topping and cracking of crude oil is carried on at this plant. No lube oil processing or other specialized refinery processes are used. The plant capacity is nominally 21,000 barrels of oil per day, however, present operations were at a rate of 28,000 barrels per day. The high rate was possible due to the conversion of a catalytic cracking unit to straight distillation.

Sweet crude only is refined at this plant. As a result, no acid sludges are produced. Caustic treating solution that is no longer fit for use in the process is collected in a tank at the refinery and is sold to a chemical company for processing and the removal of phenols. No caustic solutions are normally discharged to the sewer. Water wash

from the treatment of gasoline amounts to sixty to ninety gallons per minute.

The entire wastes from this refinery are discharged through an API separator for removal of oils. Waste volume was stated to be approximately 500 gpm. The pH of waste water discharged was stated to be 9.0. The refinery checks the operation of the separator by running determinations for oil, total solids, dissolved solids, suspended solids, and pH.

It would appear from the nature of the operation that Socony Vacuum Oil Company Refinery is not responsible for discharging wastes which might cause tastes in fish in the Mississippi River. However, it is possible that the wastes discharged may contribute to the tastes in fish and it is recommended that their process be further investigated by the collection of samples of the wastes discharged.

J. T. Moss Tie Company

Interviewed: R. C. Studebaker, Assistant Plant Superintendent

The Moss Tie Company plant operation consists of the impregnating of railroad ties, telegraph poles, etc., with asphaltic compounds. The operation at this plant is identical with that carried on at their Mt. Vernon, Illinois plant. All process wastes are discharged to a lagoon where they seep into the soil. Sanitary wastes are discharged to a cesspool. Moss Tie Company has no connection with the Monsanto village sewer.

Since Moss Tie Company is obviously not responsible for the discharge of wastes to the Mississippi River which might cause tastes in fish, it is recommended that they be dropped from further consideration.

Monsanto Chemical Company

Interviewed: F. M. Berkey, Service Superintendent

Mr. J. F. Stickley, Assistant Plant Manager, was on his vacation at the time of the inspection and, as a result, no information could be obtained regarding the present status of investigation by Monsanto Chemical Company into their process, in an attempt to evaluate the properties of their wastes which might cause tastes in fish. Mr. Berkey advised that Monsanto Chemical Company was entirely agreeable to any sampling program which we might deem necessary to determine the effect of their wastes on the river.

Recommendations

From a survey of all of the above-listed industries, it would appear that the only ones which might be considered as being at all responsible for the discharge of wastes which might cause taste in fish are Midwest Rubber, Socony Vacuum, and Monsanto Chemical Company. It is recommended that samples be collected from the outfall sewers of all three plants in order to evaluate the effect of their wastes.

A. P. Trostper
Principal Sanitary Engineer

APT:mmm

MEMORANDUM

June 30, 1970

SAUGET - Mississippi River Oil Discharge

TO: C. W. Klassen, Technical Secretary
Illinois Sanitary Water Board

FROM: Region II

DATE INVESTIGATED: June 22, 1970.

INTERVIEWED: K. Wilson, Operator, East St. Louis STP

On the above date, Sanitary Inspector Ira Matheny and the writer investigated an oil discharge on the Mississippi River. The Coast Guard had reported the discharge in a 2:00 pm phone call to Engineer E. C. Bennett.

K. Wilson, Operator was contacted at the East St. Louis, STP. According to Mr. Wilson, the plant was in normal operation and no oil was going through the plant. A check of the East St. Louis outfall sewer indicated only the characteristic red effluent caused by American Zinc Company wastes.

The area of the outfall sewer from the Sauget STP was observed at 6:00 pm and oil was found surfacing to a distance of 150' from the shore. A gasoline odor was noticed in the area.

The Sauget plant was closed at the time of the investigation. Observations of the discharge were made from the Union Electric Company property and on the Monsanto loading dock.

Kenneth F. Hammer
Sanitarian

KFH:mo

cc: Region II